Living Relationally with Creation: Animals and Christian Faith

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Editor's Note

Animals are more like human beings than any other part of creation, yet human beings are described uniquely as being in God's image. What are the implications of such similarity and difference for lab rats, pets, hunting, factory farming, vegetarianism…? In this essay, Keri McFarlane asks how animals are distinct from humans. Do animals possess rationality and the capacity for consciousness? Should animals have rights? And then begins to explore the practical implications. Her essay is not intended as an exhaustive discussion, but rather as an invitation to engage some of the essential questions. Readers are encouraged to take up one of the insights or challenges, or maybe a related one that was not mentioned, and draft an article (typically about 5,000-8,000 words) that contributes to the conversation. These can be sent to Dr. McFarlane at Keri.McFarlane@kingsu.ca who will send the best essays on to peer review. With expert advice in hand, we will then select the essays for publication in a theme issue of *Perspectives on Science and Christian Faith*. The lead editorial in the December 2013 issue of *PSCF* (see www.asa3.org/ASA/PSCF/2013/PSCF12-13Peterson.pdf) outlines what the journal looks for in article contributions. For full consideration for inclusion in the theme issue, manuscripts should be received electronically before 30 November 2014.

Looking forward to hearing your perspectives,

James C. Peterson
Past President of CSCA & Editor of *Perspectives on Science and Christian Faith*

Across the extraordinarily diverse natural world, our strongest association has always been with animals. Indeed, our story is largely told through our interactions with them—in agriculture and medicine, as companions, as food. These creatures are more like us than any other (e.g., plants, fungi, or prokaryotes). We belong taxonomically within the same group (Domain Eukarya, Kingdom Animalia), and yet we set ourselves apart. Thus, it makes sense to discuss our big questions and view our journey in relation to them.

Foundational to most issues surrounding animals and Christian faith are several debated questions: How are animals distinct from humans? Do animals possess rationality and the capacity for consciousness? Should animals have rights? In this article, I delve into these important debates, and then explore how they pertain to contemporary problems facing Christians: vegetarianism, food acquisition, laboratory animals, and pets. Throughout this article, we explore factors that influence how we think about and relate to nonhuman creatures. This is by no means an exhaustive discussion, but rather an invitation to engage some of the essential questions surrounding animals.

Human Beings as Animals

Animals represent a diverse taxonomic group, with species ranging from small to large, aquatic to terrestrial, sessile (at least for a part of their lifecycle) to motile, limbless to limbed. The group is characterized by common structural (multicellular, cell wall-less eukaryotes) and functional properties, such as nutritional requirements. And yet, despite their wide diversity, people recognize among most of the animals a common "animal character." This is evident

within the name itself; the Latin origin, *animalis*, means "having the breath of life." This intangible quality strongly influences our relationships with animals.

Each animal taxon is defined, mostly, by a collection of traits that set the group apart from other animals. For example, birds are feathered, winged tetrapods. But defining a taxon, such as a species, is not a straightforward task. Even the *species* concept varies greatly and all species definitions have fuzzy boundaries.[1] For instance, one of the more common biological definitions of *species* is a group of individuals with the capacity for natural reproduction and production of viable, fertile offspring[2]—but this definition doesn't apply for all species (e.g., brown bears, *Ursus arctos*, are considered a distinct species from polar bears, *U. maritimus;* yet, they can interbreed). Delimitation of a taxonomic unit presents a challenging task because it assumes a clear distinction among groups of organisms, whereas, in most cases, nature occurs as a continuum.

Biologically, humans (*Homo sapiens*) are a species within the kingdom *Animalia*. Thus, what separates us from other animals? What does it mean to be human? This question often arises in the context of evolution. If humans are animals, and if we co-evolved with other animals from common ancestors, then how do we set ourselves apart as image-bearers of God? This raises challenging questions if the *image of God* pertains to our morphology or human abilities, such as communication or rationality. For instance, some humans do not possess the ability to communicate or act rationally (e.g., people who have suffered strokes, babies who are not yet able to deal rationally with the world, adults with dementia), whereas some animals do have the ability to communicate or perform basic problem-solving skills.[3] When exploring definitions of *personhood*, DeGrazia points out the challenges when it comes to other hominids, language-trained animals, and other complex and highly functioning creatures such as great apes and dolphins.[4] Some theologians, such as John Calvin in his *Commentaries on Genesis*, suggest that the image of God reflects our ability to live in relationship with God.[5] Others suggest that the image of God signifies that we have been called to be stewards of God's earthly kingdom.[6]

Christians engaged in this discussion would be wise to consider what is the significance of the human species definition. Does it matter, morally, for humans to be viewed as distinct from nonhuman animals? Robert and Baylis warn that crossing taxonomic boundaries may present moral confusion regarding social and ethical obligations.[7] Yet, when the rest of creation occurs as a continuum, might there be dangers in viewing humans as uniquely distinct? Is there a risk in an "us and them" mentality? How can we identify the practical implications of defining *humans* and clarify the directions, if any, which should be followed to enrich our attitudes and practices?

Rationality and Consciousness

Philosophical debates about whether or not animals have the capacity for rationality and consciousness have been ongoing, and scientific investigations continue to provide further insight on the intellectual capacity of various species of animals.[8] Many of the abilities once thought to be uniquely human have been found, in varying degrees, in a range of animals. The debate about animal rationality and consciousness is an important one if any of these properties form the basis for characterizing humans as distinct from other animals.

Among many philosophers, rationality and consciousness are tightly connected to moral value. Aristotle, for example, defined humans by their ability for rational thought (i.e., the ability to connect ideas and make decisions in a directed manner). According to Aristotle, if rationality is the basis for intrinsic worth, and only humans possess rationality, then animals do not have intrinsic worth. Christian thinkers, such as Saint Augustine and Thomas Aquinas adhere to Aristotle's idea that only humans have the capacity for rational thought. Their perspective implies that humans must be treated with dignity and respect and as moral agents, while other components of creation exist for our own purposes (e.g., for food, medicine, or research) and only have value as commodities to improve our own lives (see also the section on *Animals as Commodities*). In comparison, David Hume did not agree with this view and argued that animals do have the capacity—albeit a limited one—for rational thought and basic learned behaviour.[9] Thus, according to Hume, both human and animal reasoning can be virtuous and provide moral value.[10]

Descartes used "consciousness" (i.e., an awareness of thought and self) as the key defining principle separating humans from animals. He claimed that consciousness is a property of an immaterial mind, or "soul." Descartes argued that animals do not possess this type of awareness —rather, they respond automatically to stimuli—and, therefore, cannot be aware of anything, including pain. Some philosophers would argue that humans are not so different from animals and that we are also simple machines responding to stimuli.[11] From that perspective, humans are no more capable of consciousness and suffering than animals, and the whole concept of consciousness as the key to human-animal distinctions becomes meaningless.

In contrast to Descartes, Michel de Montaigne argued that if animals can communicate with one another, then they cannot be mere machines.[12] Studies have shown that, in addition to the ability to communicate, some animals possess an ability for problem-solving, decision making, creativity, and self-awareness (i.e., the capacity to recognize oneself as separate from others).[13] Evidence also suggests that animals can indicate preferences.[14] If animals can have preferences, then potentially they can suffer pain. From a biological perspective, many animals, and especially vertebrates, likely have the capacity to suffer pain because they, like humans, have specialized pain receptors as part of their nervous systems and they respond in ways similar to humans to painful stimuli.

How significant are rationality and consciousness in our relationship with animals? Our biological and social relationship with animals can reveal a great deal about ourselves. For example, when we study nonhuman creatures—for physiology, psychology, neurology, etc.—we learn about our own physical nature due to our biological similarities. Can we also learn about ourselves as image-bearers? In what ways do we reflect the image of God in our interactions with animals?

Animal Rights

The moral status of animals has long been debated. Three major foundational players in this debate are Immanuel Kant, Tom Regan, and Peter Singer. Kant argued that only rational beings have intrinsic moral worth and, therefore, animals do not have moral rights.[15] Kant's assumption is that there are no rational nonhuman animals (see also the section on *Rationality and Consciousness*). However, Kant also stated that due to our rationality, humans are morally

obligated to treat animals with kindness, and that to fail to do so would adversely affect our own moral standing.[16] On the other hand, Regan—also addressing the inherent value of beings—supports equal rights among animals and humans, asserting that humans and animals share properties that Regan views as essential to moral beings, such as memories, preferences and a sense of a future.[17] As a third perspective, Singer presents a utilitarian argument to advocate animal rights based on their preference for survival.[18] Although his argument lacks Kant's notion of intrinsic worth, Singer claims that animals have moral status based on their capacity to suffer. He argues that to kill an animal possessing self-conscience—or, more specifically, an animal's awareness of its preference for its own survival—is unethical because the interests of the "greatest number" are not maximized when the animal is killed, even if the killing does not involve suffering.[19] Thus, even humane rearing or humane killing of animals is not supported by his utilitarian-based argument.

Views and interpretations about animal rights present an important topic for Christian dialogue. Some Christians declare that God's covenants include animals, too,[20] and therefore, animals should be afforded the same consideration as humans.[21] Scripture informs us that "all flesh shall see the salvation of God" (Luke 3:6) and that all of God's creatures (we all who have met God) "are being transformed into the same image from one degree of glory to another." (2 Corinthians 3:18). Thus, the questions raised here directly relate to our interactions with animals and how we address contemporary issues, such as food choices, food acquisition, and our reliance on animals. Humans often rely on animals as a component of our own servanthood, such as for feeding and clothing the world, and developing life-saving medical advancements.

These are not solely Christian issues, but for Christians engaging these arguments, we have resources in scripture and tradition that can help us navigate. "Love your neighbor as you love yourself" (Leviticus 19:18; Matthew 19:19, 22:39; Mark 12:31; Luke 10:27). Do our neighbours include animals? Henry David Thoreau argues that loving our neighbor also involves a love for nature, which Christians could extend to all of God's creation, both organic and inorganic, and of which we, too, are a part.[22] Should we extend our blanket of moral rights in whole or part across all creatures, including nonhumans, even if they are not deemed to be moral beings?

Contemporary Problems

Animals have long served in support roles for humans. As companions and commodities, in agriculture and medicine, animals have been utilized for our ends. As Christians, we have an obligation to ask: for what purposes are animals intended? Are they meant for our uses at all? Vantassel suggests that humans should rely on the use of animals within limits, and that our actions should resemble Christ's own treatment of animals.[23] However, criticism of Vantassel's position have pointed out that this view favours the use of wildlife for human benefits over the protection of wildlife for ecological benefits.[24] Thus, what roles should animals play in our own servanthood? The issues outlined in the previous sections can shed some light on these questions and how they relate to several contemporary issues facing Christians in our daily lives, as introduced below.

Vegetarianism

Eating (including eating other living things) is an embedded component in creation. Animals and all other heterotrophic creatures exist by consuming other life. For humans, eating also has

deeply important cultural, relational, and symbolic roles. Emotionally, food can revitalize memories, hopes, and happiness. Christians utilize food to nourish us spiritually by fostering fellowship and for those in the Roman Catholic tradition, through the transubstantiation of the Eucharist. As omnivores, we do not typically eat all types of edible foods available to us, but rather a subset that is based largely on tradition and values. Among different cultural and religious groups we see diverse philosophies about eating patterns and diets. An important question that follows, then, is: does the type of food we eat matter?

Traditionally, the moral and ethical debates around vegetarianism have centred around two main issues: the issue of inflicting suffering and the issue of causing death.[25] Recently, environmental stewardship has risen as a third contending issue. The environmental issue is primarily based on reducing global pollution[26] and resource depletion.[27] In 2010, a UN report from the International Panel for Sustainable Resource Management urged that a dietary shift toward veganism would significantly reduce contributions to climate change.[28] However, some argue that animal production is necessary to prevent planetary desertification,[29] although the issue is contentious.[30] Furthermore, although monoculture plant cropping is economically efficient, it also leads to considerable environmental problems (e.g., soil depletion, increased pest loads, and loss of biodiversity). These perspectives impart important dialogue for Christians. In what ways do our Christian responsibilities play a role in the food we eat? We can find insight to these questions and problems through both scripture and biology.

Interpretations about scriptural dietary guidelines vary. In the Old Testament we read that all life was created vegetarian (Genesis 1:29-30, 2:9, 15-17), then after the Flood, humans were permitted to consume meat (Genesis 9:3). In the New Testament, Jesus fed the five thousand with bread and fish (Matthew 14:13-21, Mark 6:30-44, John 6:1-14), and consumed fish himself with his disciples after the resurrection (Luke 24:41-43). Some believe that meat is only permissible to eat depending on how or from where it is obtained (i.e., "Only, you shall not eat flesh with its life, that is, its blood," Genesis 9:4; "Clean and unclean foods," Leviticus 11). Many theologians argue that the sacrifice of Jesus freed humankind from the dietary restrictions of the Old Testament, particularly with reference to Peter's vision on the rooftop (Acts 10:9-16). Some people view these biblical messages as though we are encouraged to eat meat, while others believe that we are *permitted* to eat meat, although vegetarianism would be ideal.

Biological evidence suggests that human physiology is suited for the consumption of meat. From a biochemical perspective, protein is an essential component of our diet. Nutritionally, meat provides a complete range of essential amino acids (those amino acids that we must obtain from our diet and cannot be synthesized *de novo*). However, meat is not the only way to obtain a full range of amino acids, and a vegetarian approach simply requires a greater diversity and range of vegetables, pulses and grains. Therefore, meat provides merely a *convenient* protein source. From a physiological perspective, humans possess short digestive tracts and canine teeth, both of which are characteristic of carnivorous lifestyles. Canine teeth, for example, are well-structured for tearing tough tissues, such as meat, and resemble the canines of carnivores. Humans appear to have evolved to be omnivores.

With this range of guidelines and interpretations, how might a Christian engage the topic of vegetarianism? Are we charged to be vegetarians? More precisely, to what extent is it acceptable to rely upon animals to provide us with food, either as beasts of burden or as meat?

Food Acquisition:

If one is to accept that one need not be a vegetarian, a subsequent question emerges about how those animals should be raised and killed. Two common options for acquiring animal products are hunting and farming. These two approaches to food procurement differ by how they influence—and are influenced by—the relationship between humans and animals.

In what ways might hunting affect how we live in right relationship with the Earth and all its resources? Traditional hunting forces people to spend time in creation, potentially leading to deep appreciation of God's world. Some Christians have referred to hunting as an opportunity to recognize patterns and cycles in nature.[31] In this way, hunting provides the possibility of bringing us into close relationship with wild animals within their habitat. However, the face of hunting has changed considerably over time, occurring initially for subsistence and trade (i.e., for food, tools, clothing and protection), and more recently for recreation and wildlife management. Does the change in purpose over time also reflect a shift in our relationship with animals?

Christian perspectives on hunting are influenced by interpretation of scripture, views on ethics and animal rights, and scientific research. The Bible tells us that hunting arose after the Fall. While the Bible does not forbid hunting, we encounter some guidelines and cautions about permissive approaches to hunting (e.g., Genesis 27:3, 21:20, Acts 15:28-29). In 1 Timothy 4:4 we are reminded "For everything created by God is good, and nothing is to be rejected, provided it is received with thanksgiving." Hunting involves similar ethical considerations as vegetarianism, raising questions about animal death, suffering, and environmental impact. Death is an embedded component of life, but as image-bearers, can we purposely kill a part of creation? In what ways do we respect our God-given gifts by minimizing animal suffering as a component of hunting practices? Christian proponents of hunting remind us that hunting offers a means to become active, respectful participants within God's creation and the cycles of life.[32] Similarly, conservation research has shown that hunting can serve as an essential part of creation care, often in the form of wildlife management.[33]

Thus, the issue of hunting is not straightforward and demands consideration of some deep questions. Is hunting permissible in the eyes of God if it brings enjoyment? Or is it better if remorse is felt over the intentional death of one of God's creatures? To what extent do underlying reasons and personal response to hunting matter if hunting contributes to ecological stewardship of God's creation?

We belong to an interconnected biological community and we must be reminded of this network when we consume food, especially food derived from other life. Yet, the reality is that most of us are at a distance from our food production. This shift away from a close connection with our food and its source becomes particularly evident when we look at farming.

Humans have been farming for thousands of years. Traditionally, farming primarily occurred for subsistence, thus, placing great importance on each farm animal as an essential commodity.

However, humans' relationship with farm animals has shifted as the face of farming has changed drastically, particularly during the past couple of centuries. In 2014, animal production in the USA was valued at over $100 billion annually.[34] To achieve these levels, most animal products in the developed world are now produced in factory-style systems, referred to as Concentrated Animal Feeding Operations (CAFOs) by the U.S. Environmental Protection Agency (EPA).

The shift toward factory farming was largely driven by economic forces, but in close concert with increasing demand from population growth. By farming animals in a factory-style system, animal products can be produced rapidly, cost-effectively and in large quantities, thus resulting in vastly reduced labor and stricter control of livestock. Presumably, this approach to farming could assist a nation to feed more people. Unfortunately, despite the lower costs, widespread hunger persists. Most CAFOs occur in regions where people have abundant food, and production often far exceeds their consumption needs. As people in developing countries increase their meat consumption, demands on CAFOs will intensify. But our diet and desire for meat far outstrips our needs and, more importantly, the capacity of the planet to produce enough for the growing demand.

As the industry has grown, so too have the problems, including excess animal wastes, reduced water and air quality, increased risk of infectious diseases (of both livestock and humans), and increased animal suffering (e.g., due to cramped living conditions, restricted diets, lack of fresh air and sunlight). In recent years, in recognition of these problems, several improvements have been made to mitigate some of the human health concerns caused by factory farming (e.g., bovine growth hormones have been banned in several countries, certain antibiotics have been phased out, some fast food chains claim they will no longer purchase animals treated with antibiotics). In addition, improved regulations have been established and alternative management measures have been researched and developed in response to concerns about animal welfare. Nonetheless, arguments against factory farms continue to be numerous and persuasive, often centering on animal rights and suffering, human health, environmental stewardship and conservation, resource use and distribution, employment, and economics.

As MacDonald and McBride point out, factory farms essentially substitute technology for land and labour.[35] Thus, the human-animal relationship has been drastically changed by these developments. Mason and Finelli claim that farmed animal production is disconnecting us from our proper relationship with nature and the earth's creatures, and that humanity and environmental concern have retreated, particularly as developments and 'improvements' are sought by technologists.[36] Within these circumstances, value is no longer placed on individuals, but rather on certain coveted characteristics; individuals are reduced to the equivalent of a mere commodity. What should be the Christian response to a system that makes vulnerable our ability to live relationally with the rest of God's creation?

With such a multi-faceted issue—especially one so tightly linked to the economy—, how might we respond while also recognizing that factory-farmed animal products are heavily ingrained into our daily lives? There exists a complex entanglement of our view of animals and our approach to economics, food distribution, and dietary habits.

We are quite possibly living at a pivotal moment in history. Two decades ago, McKibben proposed that our actions regarding animal farms will have dramatic effects on humanity, the Earth, and its climate.[37] Thus, the discussion must continue. For Christians, this dialogue can likely teach us something about our own brokenness. We have an opportunity to carefully evaluate our views about the utility of animals. Are animals intended to nourish us? Should they be viewed as commodities that contribute to the Christian mission, such as feeding the world? How does our response to this issue influence our ability to live in relationship with animals and the rest of creation?

Laboratory Animals

Webster proposes three foundations for discussing the use of animals in laboratories: the suitability of animal use, the significance of animal use, and the importance of human suffering.[38] For Christians, on what type of basis should decisions about animal experimentation be made?

Animals are used in laboratories for a range of purposes, both medical and nonmedical. Experimentation on live animals for the purpose of scientific progress can be useful for learning anatomy, practicing surgical techniques, assessing medical treatments, and examining various animals' functioning (such as studying brain lesions, assessing the use of chemical or biological agents, manipulating diet or living conditions, and psychological testing). Animals are also used to supply humans with appropriate products for various medical treatments, such as skin grafts, heart valves, and hormones (e.g., insulin).

Scientists rely on animal models because animals are genetically, morphologically, and physiologically similar to humans. But, some Christians who perceive a discontinuity between humans and other animals dispute the suitability of animals as 'human models.' Thus, one's perspective on humans as animals (discussed in a previous section) influences the role animals may play in medical developments. Beyond morphological similarities, what other ways might animals reflect our image back to us? What else can we learn about ourselves from animals?

Proponents for the use of laboratory animals argue that animal experimentation saves human lives. Over the past few centuries, substantial medical advancements and improvements to human welfare have occurred. Some argue that these improvements owe much of their success to the use of animals, while others have questioned how significant the role of animals has actually been in these improvements. For example, better sanitation, nutrition, and living conditions may be equally, if not more, responsible for such achievements.

Even if human suffering has been alleviated via the use of laboratory animals, is it acceptable to inflict suffering on animals to prevent our own? This question brings us back to the issues of animal rights and an animal's capacity for rationality and consciousness (discussed in previous sections). What are our Christian responsibilities? Where do animals fit with our own servanthood, or, more importantly, within God's covenants?

Pets

The story of pet ownership begins with our intentional relationship with the rest of creation. Our perception of pet ownership reflects how we know, understand and value nonhuman creatures.

The history of pets is intertwined with the history of animal domestication. Domesticated animals provide a source of nourishment (e.g., milk, meat, blood, wool, skin) or helpful companionship and labour (e.g., herding, riding, carrying loads). In the past, pet ownership would have been limited to wealthy families, who had resources to keep animals for pleasure rather than solely for food or work, because feeding pets required resources that would otherwise have been used to feed family members.

The close rapport between people and their pets reflects a reverence and affection for animals that does not characteristically transpire in the same manner with other creatures (e.g., plants, fungi) or inorganic entities (e.g., rocks, water). According to Grier, different types of pets provide different emotional and psychological benefits for their owners, such as aesthetic (e.g., fish) or ideological appeal (e.g., birds, due to their harmonious music, monogamous reproduction, and parental care).[39] Working and service animals are appreciated for their love, loyalty, and duty.

The pet industry may be, in part, a substitute for a more holistic relationship with the rest of creation and the rhythms of life. Historians suggest that growth in pet ownership served as a substitute for rich human community, particularly during times when society became increasingly impersonal and adversarial.[40] Thus, growth in pet ownership might signify some of the brokenness that has resulted from our disconnection from the natural world.

Disputes about pet ownership are complex and intricately connected to debates about animal rights, human distinctness, and whether animals have souls. In support of pet ownership, many Christian pet owners and several prominent Christian thinkers (e.g., C. S. Lewis[41]), believe that animals can be received in Heaven. Might our understanding of eternal life be influenced by beliefs about the existence of an afterlife for animals?

One common argument against pet ownership states that we cannot morally appeal for expenditures of costs and energy toward animals when human suffering persists.[42] That is, if animals are soulless then these costs are misspent because time and money attributed to pets could be better used to alleviate human suffering. But, arguably, human suffering and nonhuman animal suffering are deeply connected. As discussed above in the *Animal Rights* section, scripture informs us that all creatures—not just humans—are transformed by the redemptive power of Christ (2 Corinthians 3:18) and we are promised salvation for all flesh (Luke 3:6).

The Bible commands us to exhibit dominion over creation (Genesis 1:26, 28). In what ways do caring for and "owning" pets exemplify this dominion? Acts of dominion should be healing and freeing, rather than oppressive and disabling. In his book *Christianity and the Rights of Animals*, Andrew Linzey advises us to view all of nature as a gift from God and treat it accordingly.[43] He argues that we infringe on God's rights when we alter the natural state of life. How might we achieve equal consideration and respect among all gifts from God? In our actions, what level of importance should we afford the distinction—biological or otherwise—between humans and other animals?

Conclusions

The questions and issues raised in this article outline some of the key themes and controversies in biology and specifically touch on our responsibilities as Christians and as scientists. While the specific issues pertaining to nonhuman animals are numerous and varied, we find common threads throughout. Most especially, there is a theme of our relationship with the rest of creation.

The relationship between humans and God's earthly kingdom is complex. The resources are God's, yet he created physical and ethical dimensions of his creation, as well. While we aim to live in proper relationship with the rest of creation, we should be humbly aware that the ways in which we give power to science and the alienation we experience from the natural world have created many of the problems and questions that are raised in this article.

We should honour God by caring for all His gifts and making decisions that reflect Christ's priorities. In the end, Christianity is about love. Our actions should manifest love, stewardship, and humility. In what ways might this be achieved? Perhaps our moral responsibility can be manifested through humans forming intimate close relationships with other animals, getting to know animals as sentient beings, and recognizing ourselves as part of a larger community.

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Notes

[1] Reviewed in Kevin De Queiroz, "Species concepts and species delimitation," *Systematic Biology* 56, no. 6 (2007): 879–886.

[2] Theodosius Dobzhansky, "Mendelian populations and their evolution," *American Naturalist* 84, no. 819 (1950): 401–418; Ernst Mayr, *Systematics and the Origin of Species* (New York, NY: Columbia University Press, 1942); Sewall Wright, "The statistical consequences of Mendelian heredity in relation to speciation," in *The New Systematics*, ed. Julian Huxley, (London, UK: Oxford University Press, 1940).

[3] See for example Wolfgang Köhler, *The Mentality of Apes*, trans. Ella Winter (Oxford, UK: Routledge, 1917/1999); Vicki G. Morwitz, "Insights from the animal kingdom," *Journal of Consumer Psychology* (2014), doi:10.1016/j.jcps.2014.01.004; Alex H. Taylor, Gavin R. Hunt, Felipe S. Medina, and Russell D. Gray, "Do New Caledonian crows solve physical problems through causal reasoning?" *Proceedings of the Royal Society B: Biological Sciences* 276, no. 1655 (2009): 247–254; Sabine Tebbich, Amanda M. Seed, Nathan J. Emery, and Nicola S. Clayton, "Non-tool-using rooks, *Corvus frugilegus*, solve the trap-tube problem," *Animal Cognition* 10, no. 2 (2007): 225–231.

[4] David DeGrazia, "On the question of personhood beyond *Homo sapiens*," in *In Defense of Animals: The Second Wave*, ed. Peter Singer (Malden, MA: Blackwell Publishing Ltd, 2006).

[5] John Calvin, A commentary on Genesis, 1st English edition, ed. and trans. John King. (Calvin Translation Society edition of 1847/1965, Reprinted in 1975 Banner of Truth Trust, 1578).

[6] See for example Joshua M. Moritz, "Evolution, the end of human uniqueness, and the election of the *Imago Dei*," *Theology and Science* 9, no. 3 (2011): 307–339.

[7] Jason Scott Robert and Françoise Baylis, "Crossing species boundaries," *American Journal of Bioethics* 3, no. 3 (2003): 1–13.

[8] See for example Vicki G. Morwitz, "Insights from the animal kingdom," *Journal of Consumer Psychology* (2014), doi:10.1016/j.jcps.2014.01.004; Alex H. Taylor, Gavin R. Hunt, Felipe S. Medina, and Russell D. Gray, "Do New Caledonian crows solve physical problems through causal reasoning?" *Proceedings of the Royal Society B:*

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[9] David Hume, "Of the reason of animals," Book I, Part III, Section XVI, in *A Treatise of Human Nature.* Project Gutenberg EBook, 1739/2012). url: www.gutenberg.org/files/4705/4705-h/4705-h.htm

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